

*Please provide the following information, and submit to the NOAA DM Plan Repository.*

**Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

**1. General Description of Data to be Managed****1.1. Name of the Data, data collection Project, or data-producing Program:**

2017 OCM Unmanned Aerial Systems Lidar: San Francisco Bay NERR

**1.2. Summary description of the data:**

Quantum Spatial (QSI) and PrecisionHawk (PH) collected lidar for a test site within the San Francisco Bay National Estuarine Research Reserve (SFBNERR) Rush Ranch location using an unmanned aerial system (UAS). The target area covered approximately two square miles, although approximately three square miles of data were collected. A DJI Matrice 600 hexacopter platform was used, carrying a YellowScan lidar system. The system provides 2 returns (strongest and last) with a pulse rate of 300 kHz using a 903 nm wavelength laser. Flights were conducted from September 5-7, 2017 and were flown at 50 meters above ground level.

Specifications for the collection included 30 pulses per square meter and 0.10 meter RMSE vertical accuracy in non-vegetated areas. The average first return density was over 400 points per square meter. Classified ground point density varied spatially depending on vegetation with areas of no penetration and areas with over 60 ground points per square meter.

Deliverables included the lidar point cloud in LAS/LAZ format. Data were delivered in UTM zone 10 NAD83(2011) horizontally and NAVD88 (Geoid12b) meters vertically.

Lidar point clouds were projected back to geographic coordinates for storage in the Digital Coast Data Access Viewer and the vertical datum was converted to the ellipsoid.

**1.3. Is this a one-time data collection, or an ongoing series of measurements?**

One-time data collection

**1.4. Actual or planned temporal coverage of the data:**

2017-09-05 to 2017-09-10

**1.5. Actual or planned geographic coverage of the data:**

W: -122.04416666667, E: -122.00694444444, N: 38.21916666667, S: 38.18583333333

Rush Ranch part of San Francisco Bay NERR.

**1.6. Type(s) of data:**

*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*  
Map (digital)

**1.7. Data collection method(s):**

*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:****1.8.1. If data are from another observing system, please specify:****2. Point of Contact for this Data Management Plan (author or maintainer)****2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

NOAA Office for Coastal Management (NOAA/OCM)

**2.4. E-mail address:**

coastal.info@noaa.gov

**2.5. Phone number:**

(843) 740-1202

**3. Responsible Party for Data Management**

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:****3.2. Title:**

Data Steward

**4. Resources**

*Programs must identify resources within their own budget for managing the data they produce.*

**4.1. Have resources for management of these data been identified?****4.2. Approximate percentage of the budget for these data devoted to data management (**

specify percentage or "unknown"):

## 5. Data Lineage and Quality

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

### 5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

*(describe or provide URL of description):*

Lineage Statement:

Lidar data were acquire, processed, and delivered to NOAA by Quantum Spatial and PrecisionHawk. NOAA evaluated the data and processed it to the Digital Coast standard projection and datum for distribution.

Process Steps:

- 2017-09-07 00:00:00 - The LiDAR survey occurred between September 5, 2017 and September 7, 2017 using a Yellowscan laser system mounted in a DJI Matrice 600 hexacopter UAS and flown by PrecisionHawk pilots. Upon completion of data acquisition, Precision Hawk processed SBETs and raw point data into geolocated swaths. Processing tasks included GPS control computations, smoothed best estimate trajectory (SBET) calculations, kinematic corrections, and calculation of laser point position. Ground control data was collected by Precision Hawk to be used in the post-processing and calibration of the LIDAR flights. Following calibration, QSI initiated a suite of automated and manual techniques to classify the LiDAR points and create the requested deliverables. Processing methodologies were tailored for the landscape. Classifications were as follows: Unclassified (class 1) - Laser returns that are not included in the ground class or other vegetation classes, retained in order to avoid false vegetation classing within roads or other bare ground surfaces. Ground (class 2) - Laser returns that are determined to be ground using automated and manual cleaning algorithms. Low Noise (class 7) - Laser returns that are determined to be artificial points below the ground surface. Water (class 9) - Laser returns that are determined to be water using manual cleaning techniques. Near Ground Noise (class 14) - Laser returns that are determined to be artificial points between 0 and 20 meters above the ground surface. High Noise (class 18) - Laser returns that are determined to be artificial points, equal to or greater than 20 meters above the ground surface.
- 2018-02-27 00:00:00 - The NOAA Office for Coastal Management (OCM) received the files in las format. The files contained Lidar elevation and intensity measurements. The data were in UTM zone 10 (NAD83 2011 Epoch 2010.0) and NAVD88 (Geoid12b) vertical meters. OCM performed the following processing to the data to make it available within the Digital Coast: 1. The data were converted from UTM to geographic coordinates. 2. The data were converted from NAVD88 (orthometric) heights to NAD83(2011) ellipsoid heights using Geoid12b grids. The data was received without a metadata record. (Citation: UAS lidar)

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## **6. Data Documentation**

*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

**6.1. Does metadata comply with EDMC Data Documentation directive?**

No

**6.1.1. If metadata are non-existent or non-compliant, please explain:**

Missing/invalid information:

- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

**6.2. Name of organization or facility providing metadata hosting:**

NMFS Office of Science and Technology

**6.2.1. If service is needed for metadata hosting, please indicate:**

**6.3. URL of metadata folder or data catalog, if known:**

<https://www.fisheries.noaa.gov/inport/item/51654>

**6.4. Process for producing and maintaining metadata**

*(describe or provide URL of description):*

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: [https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC\\_PD-](https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-)

Data\_Documentation\_v1.pdf

## 7. Data Access

*NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

### 7.1. Do these data comply with the Data Access directive?

**7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?**

**7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:**

### 7.2. Name of organization of facility providing data access:

Office for Coastal Management (OCM)

#### 7.2.1. If data hosting service is needed, please indicate:

#### 7.2.2. URL of data access service, if known:

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=8467>

[https://coast.noaa.gov/htdata/lidar2\\_z/geoid18/data/8467](https://coast.noaa.gov/htdata/lidar2_z/geoid18/data/8467)

### 7.3. Data access methods or services offered:

This data can be obtained on-line at the following URL: <https://coast.noaa.gov/dataviewer>

### 7.4. Approximate delay between data collection and dissemination:

**7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:**

## 8. Data Preservation and Protection

*The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.*

### 8.1. Actual or planned long-term data archive location:

*(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)*

**8.1.1. If World Data Center or Other, specify:**

**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**

**8.2. Data storage facility prior to being sent to an archive facility (if any):**

Office for Coastal Management - Charleston, SC

**8.3. Approximate delay between data collection and submission to an archive facility:**

**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**

*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*

## **9. Additional Line Office or Staff Office Questions**

*Line and Staff Offices may extend this template by inserting additional questions in this section.*